

REMARKS

Claims 1-4 are pending. Claims 1-4 have been amended to define the claimed alloy material as being in the form of a billet and to redefine the thickness of the segregation layer. Claim 4, which stands withdrawn as being directed to a non-elected invention, is amended to depend from claim 1. The numerical amendment in claim 1 is supported in Table 2. No new matter is added.

As required by the Office Action, Applicants affirm the provisional election of Group I (claims 1-3), with traverse. Applicants respectfully request rejoinder and allowance of claim 4, as amended to depend from claim 1.

The Office Action rejects claim 1 under 35 U.S.C. 103(a) as being obvious over Jin et al. (U.S. Patent No. 6,120,621). The Office Action somewhat similarly rejects claim 2 under 35 U.S.C. 103(a) as being obvious over Jin et al. in view of Igarashi (U.S. Patent No. 2,166,496) and claim 3 under 35 U.S.C. 103(a) as being obvious over Jin et al. in view of "Aluminum and Aluminum Alloys, p. 88-89). These rejections are traversed, as they may apply to the amended claims.

The present invention is directed to "an aluminum alloy for forging." In contrast, Jin et al. is directed to an "aluminum alloy strip useful for can stock having a thickness of less than or equal to about 30 mm" (see the first line of the Abstract). Thus, Jin et al. do not teach or suggest an alloy for forging.

However, in order to expedite prosecution of this application and even more clearly distinguish the aluminum alloy strip of Jin et al., Applicants have amended claim 1 to define the claimed alloy as being "a billet." One of ordinary skill in the art would not consider the Jin et al. "30 mm strip" to be a "billet."

In any case, the present invention provides an aluminum alloy billet as cast for forging. Specifically, the invention is characterized in that the alloy comprises a segregation layer having 0.2 to 2 mm thickness and generated in the surface.

In a billet produced by continuous casting, a coarse recrystallization surface structure is formed in hot working the billet, and this results in decrease in strength and elongation. According to the present invention, the segregation layer, which has been known to be disadvantageous, is a material for inhibiting the formation of coarse recrystallization grains. That is, since the thickness of the segregation layer is set within 0.2 to 2 mm, coarsening of the recrystallization grains can be inhibited. Therefore, the present invention can provide a billet having a stable oxide film, generated in a surface layer, and having high fatigue strength under stress in a range from an intermediate degree to a low degree. The criticality of the limitation is shown in Table 2. Examples 1 and 2 of the invention with 0.2 mm thick of the segregation layer achieved superior elongation.

In contrast, as mentioned above, Jin et al. discloses an aluminum alloy strip, which is different from a billet. Furthermore, Jin et al. requires the thickness of the segregation layer of from 0.01 to 0.06 mm in claim 11, and the thickness of the segregation layer was 0.1 to 0.15 mm in not preferred Example 5. The thickness of the Jin et al. segregation layer is smaller than that of the presently claimed invention, and the present invention, as well as the advantages provided in the reply, would not have been obvious from Jin et al.

For at least the above reasons, reconsideration and withdrawal of the rejections of claims 1, 2 and 3 under 35 U.S.C. 103(a) are respectfully requested.

Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any additional fees may be charged to Counsel's Deposit Account 01-2300, **referencing attorney docket number 108421-00076**.

Respectfully submitted,

A handwritten signature in black ink, reading "Robert K. Carpenter", written over a horizontal line.

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